UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/849,967 | 05/08/2001 | Stuart A. Newman | 51230-00601 | 1338 |

25243 7590 05/04/2004

COLLIER SHANNON SCOTT, PLLC
3050 K STREET, NW
SUITE 400
WASHINGTON, DC 20007

| EXAMINER | |
|---|---|
| YU, MISOOK | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1642 | |

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/849,967 | NEWMAN ET AL. | |
| | Examiner | Art Unit | |
| | MISOOK YU, Ph.D. | 1642 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15,21,29,30 and 55-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,21,29,30 and 55-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 30, 2004 has been entered.

Claims 1, 15, 29, 56, 57, 58, 59, 60, 61, 62, 63, and 64 are amended. Claims 1-15, 21, 29, 30, 55-64 are pending, and examined on merits.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

This Office action contains new grounds of rejection.

### *Claim Objections*

The objection of claim 21 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim is withdrawn in view of the amendment.

### *Claim Rejections - 35 USC § 112, Withdrawn*

The rejection of claims under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for method of modifying activity of hnRNP A proteins, does not reasonably provide enablement for method of modifying activity of any other nucleotide binding proteins is withdrawn in view of the amendment.

***Claim Rejections - 35 USC § 102***

Claims 1, 3, 6, 15, 29, and 30, 55-58 **remain rejected** for reason of record, and claims 5, 59, and 60 are newly rejected under 35 U.S.C. 102(b) as being anticipated by **Blanchette et al** (Apr 1, 1999, The EMBO Journal, vol. 18, pages 1939-1952) as evidenced by Sambrook et al (1989, Molecular Cloning, A Laboratory Manuel, 2nd Edition, pages 16.30-16.33) for claim 5.

Claims 1, 3-6, 15, 29, and 30, 55-60 are interpreted as drawn to method of only one active step i.e. transfecting exogenous hnRNP A1 substrate(s) i.e. capable of binding of hnRNP A protein (claims 1, 3, 5, 6, 15, 29, 30) comprising an intronic splicing silencer (claims 57, and 58) or an intronic splicing enhancer (claims 59 and 60) into tissue culture cell (claim 5) with ark-known transfection methods i.e. applying said substrate(s) to said cell (claim 3) with a detergent (claim 6) in order to modify activity of hnRNP A1 protein of inside said cell. This rejection is maintained because the Office interprets that the limitation "a plurality of polynucleotide sequences" in line 4 of claim 1 encompasses DNA. Therefore "the polynucleotide sequences" in lines 6, and 7 of claim 1 could be interpreted as the complementary mRNA from the introduced DNA.

Applicant argues that: Blanchette et al disclose the use of CE1 and CE4 sequences located upstream and down stream of mouse hnRNP A1Exon 7B to the inclusion of exon 7B in the spliced RNA, thus the CE1 and CE4 are cis-acting, meaning that the regulatory elements are part of the target sequence; this is contrasted with trans-elements that are physically unlinked to a target RNA sequence to block the activity of an RNA binding protein; applicant's invention uses trans-elements to modify

hnRNP A protein; the polynucleotide sequences in applicant's invention, unlike Blanchette, are not located upstream of the target RNA sequence(s); claims 1, and 15 have been amended to reflect the trans nature of the polynucleotide sequences; and all the dependent claims depend on claims 1, 15, 29 are therefore distinguishable from Blanchette et al.,; and, the currently amended claims use the trans nature of the polynucleotide sequences.

These arguments have been fully considered but found not persuasive because applicant's arguments are not commensurate in scope of the claims. The instant claims 1, 29, 57, and 59, say the invention is to introduce into a cell a plurality of "polynucleotide sequences" i.e. exogenous substrate(s) for a hnRNP A protein, wherein the introduced polynucleotide sequences compete *in trans* with at least one endogenous RNA sequence for interacting with the hnRNP A protein.

The limitation "in trans" is used in the art as opposed to cis as applicant argues. Voet et al (Biochemistry, 1990, John Wiley & Sons, page 856 only) teach at page 856, left column that cis means from same RNA molecule, and implies "in trans" means not the same molecule. To this point, the Office and applicant are in agreement of what "in trans" means.

The minigene containing intronic enhancers (CE1a, and CE4) and silencers (CE6 and CE4) (see Fig. 1and 10, and abstract, page 1940 under the heading "CE4 modulates exon 7B skipping in vivo", also see the paragraph bridging page 1948-1950) into HeLa cells (see page 1950 under the heading "Transfection assays") is in fact in trans with at least one endogenous RNA sequence produced by the HeLa cells for

interacting with the hnRNP A protein because the introduced sequences are not fused with at least one endogenous RNA sequences produced by the transfected HeLa cells.

In other words, there are two kinds of polynucleotide molecules inside the cells of Blanchette et al.,: namely, the endogenous and transfected polynucleotides. The exogenously introduced polynucloetide containing CE1a, CE4, and CE6 in the minigene (see page 1940, left column, the three lines) is ***"in trans"*** as compared to the endogenous hnRNP substrates of HeLa cells (see page 1950, under the heading of "Transfection assays" and also page 1949). Thus, the pre-mRNA from the exogenously introduced minigene competes *in trans* with at least one endogenous RNA sequence for interacting with the hnRNP A protein. The hnRNP A1 protein of the cell is busy working on the exogenously introduced CE1 and CE4 (in trans to the endogenous RNA) instead of working on the endogenous substrate(s). Claim 1, 57, and 59 define "in trans" using "at least one endogenous RNA sequence" as the reference point. However, applicant argues with a different reference point as to what is "in trans". In other words, applicant argues that "in trans" means with the reference point of what is being spliced.

The rejection of claims under 35 U.S.C. 102(b) as being anticipated by McNally et al (Mar. 1999, Journal of Virology, vol. 73, pages 2385-93) is **withdrawn** in view of the amendment.

The rejection of claims 55, 56, and 61-64 under 35 U.S.C. 102(b) as being anticipated by anticipated by Muro et al (Mol Cell Biol. 1999 Apr;19(4):2657-71) is also **withdrawn** in view of the amendment.

The rejection of claims 55, 56, 59, 60 under 35 U.S.C. 102(a) as being anticipated by Hastings et al (J Biol Chem. 2000 Apr 14;275(15):11507-13) is also **withdrawn** in view of the amendment.

***Claim Rejections - 35 USC § 103, Withdrawn***

The rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Blanchette et al (Apr 1, 1999, The EMBO Journal, vol. 18, pages 1939-1952) as applied to claims 1, 3, 6, 11, 15-18, 20, 22-30, 37-42 above, and further in view of Ross et al (1997, Molecular And Cellular Biology, vol. 17, pages 2158-2165) is **withdrawn** in view of the amendment.

***The Following Are New Grounds of Rejection***

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21, and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 21 and 30 recite "at least one resulting phenotypic characteristics of the cell" but it is not clear what the metes and bounds are. Is it cell death, limb formation, winkling of skin, gray hair, CD4 expression on a cell?

Claims 1-15, 21, 29, 30, 55-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This new matter rejection is made because of applicant's argument traversing the art rejection of record above using the new limitation "*in trans*" in the base claims 1, 29, 57, 59, 61, and 63. Applicant argued that applicant's invention is a method using polynucleotide sequences compete in trans with an endogenous RNA sequence for hnRNP A protein, whereas art of record uses polynucleotide sequences containing cis-acting elements.

The limitation "in trans" is used in the art as opposed to "cis". Voet et al (Biochemistry, 1990, John Wiley & Sons, page 856 only) teach at page 856, left column that "cis" means from a same RNA molecule, and implies "in trans" means not the same molecule.

Applicant is kindly requested to point out the support in the specification as originally filed for the new limitation "*in trans*" as the way the applicant now defines it. It appears that the limitation "in trans" base claims 1, 29, 57, 59, 61, and 63 limits the scope in respect to the structural nature of polynucleotide sequences being introduced into a cell, wherein said polynucleotide sequences compete in trans with endogenous RNA substrate for interacting with hnRNA A protein. The Office is unable to locate the support in the specification as originally filed that applicant's invention is to method as

applicant argues in the art rejection i.e. a method of introducing polynucleotide molecules into a cell, wherein said polynucleotide should be capable of binding to hnRNP A protein, but said introduced polynucleotide molecule should not have cis-acting elements. Note applicant's argument the paragraph bridging at page 10 and 11 of the amendment filed on 30 January 2004. Applicant argued that the CE1 and CE4 are cis-acting, meaning that the regulatory elements are part of the target sequence; This is contrasted with trans-elements that are physically unlinked to a target RNA sequence (same as introduced sequence) to block the activity of an RNA binding protein; Applicant's invention uses trans-elements to modify hnRNP A protein; the polynucleotide sequence of Blanchette have cis acting element upstream of the target RNA sequence (this sequence applicant referring to is the introduced sequence produced from the transfected minigene, not endogenous RNA sequence produced from the chromosome inside the HeLa cells.

Claims 1-15, 21, 29, 30, 55-64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is "undue" include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3)

relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

The nature of invention is interpreted as broadly drawn to method of modifying hnRNP A protein by introducing into a cell a plurality of polynucleotide sequence capable of binding hnRNP A protein, or introducing into a cell a plurality of polynucleotide sequence comprising any ESS (exonic splicing silencer), ESE (exonic splicing enhancer), ISS (intronic splicing silencer), or ISE (intronic splicing enhancer) into any cell. More specifically, claims 1-15, 21, 29, 30, 55-64 are interpreted as drawn to method of modifying activity of any proteins that belongs to hnRNP A protein with the two active steps of (1) introducing polynucleotide sequence capable of binding to the hnRNP A protein (claims 1-15, 21, 55, and 56), introducing polynucleotide sequence capable of binding to the hnRNP A1 protein (claims 29, and 30), introducing polynucleotide sequence comprising at least one ISS (claims 57, 58), introducing polynucleotide sequence comprising at least one ISE (claims 59, and 60), introducing polynucleotide sequence comprising at least one ESS (claims 61, and 62), or introducing polynucleotide sequence comprising at least one ESE (claims 63 and 64), (2) followed by interacting the introduced polynucleotide sequences with any hnRNP A protein (claims 1-15, 55-64) or interacting the introduced polynucleotide sequence with any RNP A1 protein (claims 29 and 30).

The specification discloses: at Fig.1b, chicken hnRNP A1 amino acids sequences; three different isoforms of human hnRNP proteins i.e. hnRNP A1, $A1^B$, and A2 have been discovered so far; Examples 1 at page 59, chicken cells electroporated with 138 base sense transcript from the chicken *fgfr2IIIc* mRNA containing the ESS corresponding to exon 8 showed a phenotype in cartilage formation that is different from the control cells electroporated with a different sense transcript that does not contain ESS.

This rejection has several aspects. First, the disclosure at Example 1 in the instant application indicates that only manipulative active step is to introduce polynucleotide into a cell. It appears that a practitioner of the claimed invention cannot make the introduced polypeptide sequence to interact if the sequence is somehow a sequence that hnRNP A protein cannot bind to. In other words, the interacting step is not a manipulative step.

Second, Maniatis and Tasic (2002, Nature, vol. 236, pages 236-243) teach that pre-mRNA splicing is carried out by multicomponent ribonucleoprotein complexes, called splicesomes that recognize 5' and 3' splice sites, which are located at exon-intron boundaries. The authors of the article state that "5' and 3' splice sites are poorly conserved" (page 236, right column, $4^{th}$ line); this implies that a sequence prediction based on a known sequence is a difficult task. There are multiple other splicing factors (hnRNP A is one of them) that bind to ESEs (see Fig. 1). Multiple proteins for example, both hnRNP A1 and SF2/ASF can bind to the same ESE sites depending on the in vivo situations (note page 238, left column, $1^{st}$ paragraph). For example, if ESS in an exon

of HIV tat pre-mRNA, the one shown Fig. 1 of Caputi et al., (1999, The EMBO Journal, vol. 18, pages 4060-67) is introduced into a cell, either hnRNP A1 protein, or SF2/ASF could bind to the introduced sequence. Maniatis and Tasic teach that SF2/ASF has a higher affinity for the sequence i.e. HIV tat pre-mRNA than hnRNP A1 protein. Thus, the introduced sequence could easily compete in trans with at least one endogenous RNA sequence for interacting with the SF2/ASF protein, instead of the intended hnRNP A protein or hnRNP A protein. The specification does not teach how to chase away the SF2/ASF protein inside cell, while making the introduced sequence to interact with hnRNP A1 protein. The specification fails to teach that the phenotype seen by introducing the polynucleotide containing ESS (i.e. chicken cartilage formation in Example 1) is whether competition of the introduced sequence in trans occurred with at least one endogenous RNA sequence for interacting with SF2/ASF or hnRNP A1 protein. The specification does not teach the polynucleotide sequence that only hnRNP A, or A1 protein binds to. However, Maniatis and Tasic teach that depending on the in vivo conditions such as developmental stages for example, during embryogenesis, the same ESS, ESE, ISS, and/or ISE are bound by different splicing proteins. This results in producing different isoforms from a single pre-mRNA. In other words, the same polynucleotides are used over and over by different splicing proteins in concerted manner (i.e. one binding to one ESE lead to second ESE binding in cooperative way) to meet the need of cells or virus at the moment. This concerted effort inside cells has not been teased out yet and it is difficult to modify only one splicing factor, without affecting the other numerous splicing factors.

The instant claims say introducing a polynucleotide sequence capable of binding hnRNP protein, ESS, ESE, ISE, or ISS into any cell. But it is not clear whether introducing the HIV tat exon containing ESS into an avian cell (see construction of instant claim 1 vs. 9) would result in the purpose stated in the preamble of the claims.

The specification does not teach whether introduction of the chicken *fgfr2IIIc* mRNA containing the ESS corresponding to exon 8 (see Example 1 at page 59 of the specification) into HIV infected human T cells would result in modifying hnRNP A protein of said T cells. The specification does not teach what kind of phenotype one has to look for in order to determine whether the introduced sequence modified hnRNP protein or not.

In summary, the claims as currently construed say that introduction of polynucleotide capable of binding RNP A protein, or introduction of polynucleotide comprising ESS, ESE, or ISS, or ISE into any cell would result in modifying hnRNP A protein but the art teaches that it is difficult to predict what is going to happen to the introduced once entered into a cell because numerous other splicing factors also compete for binding of same sequences. The specification does not teach how to make ISS, ISE, ESS, ESE, or polycleotide sequences capable of binding any hnRNP A protein. Is there a universal ISS, ISE, ESS, and/or ESE for all hnRNP A proteins? The art mostly teaches ISS, ISE, ESS, ESE, or polycleotide sequences capable of binding **human** hnRNP A1 protein. The instant claims say introduction of ISS, ISE, ESS, ESE, or polycleotide sequences capable of binding hnRNP A into non-human cells and it is not clear ISS, ISE, ESS, ESE, or polycleotide sequences capable of binding human

hnRNP A1 protein would work in dog cells that express dog hnRNP A1 protein. The specification fails to teach the issues raised above.

Considering the unpredictable state of art and low skill in the art, limited guidance, no examples in the specification how to use the instantly claimed invention, broad breath of the claims, it is concluded that undue experimentation is required to practice the invention. It is noted that law requires that the disclosure of an application shall inform those skilled in the art how to make the alleged discovery, not how to screen it for themselves.

***Claim Rejections - 35 USC § 102***

Claims 1, 3, 14, 15, 21, 29, 30, 55, 56, 57, 58, 61-64 are rejected under 35 U.S.C. 102(b) as being anticipated by Purcell and Martin (J. Virol.,1993, vol. 67, pages 6365-78) as evidenced by Damgaard et al., (2002, RNA, vol. 8, pages 1401-1415) and by Section 2. Virology (total 5 pages) of Medical Microbiology (S. Baron, ed) downloaded from url>>cbi.nlm.nih.gov/books on 4/20/2004.

This rejection is made because the Office interprets that claims 1, 3, 14, 15, 21, 29, 30, 55, 56, 57, 58, 61-64 are as drawn to method with only one manipulative active step i.e. introducing into a cell a plurality of polynucleotide sequence capable of binding hnRNP A protein (claims 1, 3, 14, 15, 21) by applying said polynucleotide sequence to said cell (claim 3), or a plurality of polynucleotide sequences capable of binding hnRNP A1 (claims 29, and 30), a plurality of polynucleotide sequences comprising an intronic splicing silencer (ISS) (claims 57, and 58), a plurality of polynucleotide sequences comprising exonic splicing silencer (ESS), (claims 61, and 62), a plurality of

polynucleotide sequences comprising exonic splicing enahncer (ESE) (claims 63 and 64), wherein the introduced polyncleotide sequences compete in trans with at least one endogenous RNA sequence for interacting with the hnRNP A protein or hnRNP A1 protein.

Claims 1, 3, 14, 15, 21, 29, 30, 55, 56, 57, 58, 61-64 as currently construed read on the procedure of infecting HIV-1 virus to lymphocytes or human T-cell lines by contacting said cell lines with HIV-1 virus disclosed in lines 4-5 of abstract, and page 6366, right column, under the heading "Cell culture, transfections, and infections", page 6374 under the heading "Infectivity of splicing mutants of HIV-1" of Purcell and Martin (cited above) because the only manipulative active step in the instant claim 1, 3, 14, 15, 21, 29, 30, 55, 56, 57, 58, 61-64 are "introducing a plurality of polynucleotide sequences".

Purcell and Martin do not teach that HIV genomic RNA has a plurality of polynucleotide sequence capable of binding hnRNP A protein or hnRNP A1, ISS, ESS, or ESE. However, Damgaard et al., teach that HIV-1 RNA inherently has ISS, ESS, and ESE (see abstract, page 1403, Table 1) that hnRNP A1 (a species of hnRNP A protein) binds to. Also Note Fig. 10 of Purcell and Martin, where virion produced from wild type construct i.e. pNL4-3 was also infected to 12D7 cells, which is human T-leukemic cell line according to Lee et al., (FASEB J., 2000, vol. 14, pages 516-22 abstract only). Further, HIV RNA in its virion is a single-stranded RNA (similar to HTLV-1) as taught by Section 2. Virology of Medical Microbiology. Note page 4 under the heading Human Immunodeficiency Virus and the subheading "Structure" and page 2 and page 3. The

Office treats the limitation "the polynucleotide sequence compete in trans with at least one endogenous RNA" is the inherent characteristic of the HIV RNA. The introduced HIV RNA is inherently *in trans* with at least one endogenous RNA sequence produced by transcription of genomic DNA sequences of the lymphocytes or human T-cell lines of Purcell and Martin since they (the introduced RNA, and endogenously produced RNA) are not same molecules. They exist inside a cell as different molecules. They are in trans to each other. In other words, they are fused together like Siamese twins.

***Claim Rejections - 35 USC § 103***

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchette et al (Apr 1, 1999, The EMBO Journal, vol. 18, pages 1939-1952) as applied to claims 1, 3-6, 15, 29, and 30, 55-60 above, and further in view of Sambrook et al (1989, Molecular Cloning, A Laboratory Manuel, 2nd Edition, pages 16.30-16.33).

See interpretation of claims 1, 3-6, 15, 29, and 30, 55-60 above. Claim 4 is interpreted as drawn to method of transfecting hnRNP A protein interacting polynucleotide with liposome method. Blanchette et al do not teach liposome transfection method. However, Sambrook et al., teach at page 16.31 that liposome transfection method is a functionally equivalent to calcium phosphate method of Blanchette et al. Therefore, it would have been prima facie obvious to one having ordinary skill in the art at the time the claimed invention was made to substitute a functionally equivalent method to transfect polynucleotides of interest with a reasonable expectation of success.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MISOOK YU, Ph.D. whose telephone number is 571-272-0839. The examiner can normally be reached on 8 A.M. to 5:30 P.M., every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne C Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MISOOK YU, Ph.D.
Examiner
Art Unit 1642